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I.J. Gordon • H.H.T. Prins
Editors

The Ecology of Browsing and Grazing

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Iain J. Gordon
CSIRO Davies Laboratory
PMB PO Aitkenvale
Qld 4814
Australia

Herbert H.T. Prins
Resource Ecology Group
Wageningen University
Droevendaalsesteeg 3a
6708 PB Wageningen
The Netherlands

Cover illustration: Zebras alerted by a predator in Mana Pools National Park in the Zambezi Valley, Zimbabwe. (Photo Iain J. Gordon)

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Foreword

About fifty years ago, when I, as a young comparative anatomist, first looked at a wild ruminant – the European roe deer – the basic thinking concerning the ecology, behaviour, physiology and anatomy of ruminants was based on domesticated grazers, namely sheep and cattle. I could not believe the customary view that the roe deer was nothing more than a mini-cow with a choosy predilection for flowering herbs, tender leaves and shoots. Already my comparison of a red deer stomach with that of a roe deer caused me to bring to mind the different evolutionary traits of cervids as compared with bovids, of which Europe has but a few wild species left. At that time, there was no thought of integrated management of vegetation and herbivores: hunters aimed for higher game densities, foresters considered (and still do) browsers a pest, to be reduced if not eliminated from their planted forests, and advocates of animal welfare agitated against hunting. All this has negatively influenced any serious attempt to develop sustained yield concepts, certainly in Central Europe.

Thus I was overwhelmed by the living demonstration of bovid evolutionary ‘explosion’ and niche separation between extant species, when I came to study large herbivores in East Africa for ten years prior to decolonisation (the ‘Uhuru’ of 1963). When I first presented some of my morphological findings on African herbivores at a London Symposium in 1966, the audience encouraged me to extend and deepen my observations systematically. This led in 1972, initially in collaboration with the British botanist and wildlife researcher Don Stewart, to a classification of ruminants into three feeding types – first recognising a dichotomic evolution with numerous intermediate forms, a system in common use today.

We have to remember that mammalian digestive tracts (of carnivores, omnivores and herbivores) are extremely set and conservative – the result of evolution; this is especially the case with foregut-fermenting herbivores. Ruminant evolution beyond tragulids proceeded over more than 25 million years apparently not step by step (like a ladder), but frequently in parallel fashion, like the growth pattern of a bush or baobab tree. This is why we find extant frugivorous and browsing concentrate selectors (both large and small) in dominant numbers in three of the four ruminant families, but almost no true bulk and roughage grazers (except the Père David’s deer) amongst the cervids. In contrast, we see most of the grazers, stimulated by changing climate and following the spread of the grasses, amongst the Bovidae.

Browsers, irrespective of the family they belong to, have retained their archaic morphophysiological features, which evolved before grasses became the dominant plants under the then-prevailing climatic conditions. Browsers are poorly adapted to digesting the structural carbohydrates within grasses, yet browsers have successfully remained within the large herbivore spectrum for more than 10 million years. If it is the browsers that, according to the elaborate analyses and conclusions of this stimulating book, will be the prime winners of the global future, one can only hope and pray that the type of collaboration between scientists and ecosystem managers (including foresters and agronomists) which the editors appeal for will come to pass.

After a long and active life in the field of basic and applied herbivore wildlife research, I feel honoured and encouraged by the authors and especially by the editors of this future-oriented volume to contribute a foreword, with all my good wishes for a worldwide positive reception not only of this book but also of the fascinating animals which, I strongly believe, must remain the gentle modifiers of our landscapes and perhaps even of our anthropocentric view of this world's nature.

Berlin, Baruth

Reinhold R. Hofmann
Dr.med.vet.
Professor emeritus

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Contributors

Jan P. Bakker

Community and Conservation Ecology Group, University of Groningen, P.O. Box 14, 9750 AA, Haren, The Netherlands

Marcus Clauss

Division of Zoo Animals, Exotic Pets and Wildlife, Vetsuisse Faculty, University of Zurich, Winterthurerstr. 260, 8057 Zurich, Switzerland, mclauss@vetclinics.unizh.ch

Alan J. Duncan

Macaulay Institute, Craigiebuckler, Aberdeen AB15 8QH, Scotland, UK, a.duncan@macaulay.ac.uk

Patrick Duncan

Centre d'Études Biologiques de Chizé, Centre National de la Recherche Scientifique, Villiers-en-Bois, 79360 Beauvoir-sur-Niort, France

Hervé Fritz

Centre d'Études Biologiques de Chizé, CNRS UPR 1934, 79360 Beauvoir-sur-Niort, France, fritzh@cebc.cnrs.fr

Jean-Michel Gaillard

Laboratoire de Biométrie et Biologie Évolutive (Unité Mixte de Recherche N° 5558), Centre National de la Recherche Scientifique, Université Lyon 1, 43 Boulevard du 11 Novembre, 69622, Villeurbanne Cedex, France, capreolus@wanadoo.fr

Iain J. Gordon

CSIRO - Davies Laboratory, PMB PO Aitkenvale, Qld 4814, Australia, iain.gordon@csiro.au

Kathryn A. Harrison

Institute of Environmental and Natural Sciences, Soil and Ecosystem Ecology Laboratory, Department of Biological Sciences, Lancaster University, Lancaster LA1 4YQ UK, k.a.harrison@lancs.ac.uk

Alison J. Hester

Macaulay Institute, Craigiebuckler, Aberdeen, AB15 8QH, UK

Jürgen Hummel

Institute of Animal Science, Department of Animal Nutrition, University of Bonn,
Endenicher Allee 15, 53115 Bonn, Germany

Christine Janis

Department of Ecology and Evolutionary Biology, Brown University, Providence,
RI 02912, USA, Christine_Janis@Brown.edu

Thomas Kaiser

University of Hamburg, Biozentrum Grindel and Zoological Museum, Martin-
Luther-King-Platz 3, 20146 Hamburg, Germany

François Klein

Office National de la Chasse et de la Faune Sauvage, Centre National d'Étude et
de Recherche Appliquée, 1 Place Exelmans, 55000 Bar-le-Duc, France

Anne Loison

Laboratoire de Biométrie et Biologie Évolutive (Unité Mixte de Recherche
N° 5558), Centre National de la Recherche Scientifique, Université Lyon 1,
43 boulevard du 11 novembre, 69622, Villeurbanne Cedex, France

Daniel Maillard

Office National de la Chasse et de la Faune Sauvage, Centre National d'Étude et
de Recherche Appliquée, 95 rue Pierre Flourens, BP 74267, 32098 Montpellier
Cedex 05, France

Norman Owen-Smith

Centre for African Ecology, School of Animal, Plant and Environmental Sciences,
University of the Witwatersrand, Wits 2050, South Africa,
norman@gecko.biol.wits.ac.za

Dennis P. Poppi

Schools of Animal Studies and Veterinary Science, University of Queensland,
St Lucia 4072, Brisbane, Australia

Herbert H.T. Prins

Resource Ecology Group, Wageningen University, Droevendaalsesteeg 3a, 6708
PB Wageningen, The Netherlands, herbert.prins@wur.nl

Kate R. Searle

CSIRO - Sustainable Ecosystems, Davies Laboratory, University Drive,
Annandale, QLD 4814, Australia, kate.searle@csiro.au

Lisa A. Shipley

Department of Natural Resources, Washington State University, Pullman,
Washington 99163, USA

Christina Skarpe
Hedmark University College, Faculty of Forestry and Wildlife Management,
2480 Koppang, Norway, Christina.Skarpe@nina.no

Sip E. Van Wieren
Resource Ecology Group, Wageningen University, Droevendaalsesteeg 3a, 6708
PB Wageningen, The Netherlands, Sip.vanWieren@wur.nl